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ABSTRACT

Ways in which the National Center for Education Statistics (NCES) might reorient its activities to assist educational policy makers in making informed decisions are discussed. The first section discusses public school education as an investment. The outcomes of education should be followed as students enter the work force, at the local and federal level. Little is known about the link between education and our national economic status. A high quality database, building on the High School and Beyond study, should also track students through alternative educational programs. The second section addresses the level of aggregation of data, which should be based on its relevance for policy making, rather than convenience of data collection. NCES should provide reliable data on individual achievement and economic performance over time, school productivity, and regional economic returns on educational investments. In following the economic return, both individual income and payment of property tax are relevant. The third section encourages federal and regional databases, and suggests standards for NCES data collection: parsimony, accuracy, comparability, timeliness, and accessibility. A list of references is included. (GDC)

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# EDUCATIONAL STATISTICS FOR EDUCATIONAL POLICY: A POLITICAL ECONOMY PERSPECTIVE

Submitted to the

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# EDUCATIONAL STATISTICS FOR EDUCATIONAL POLICY: A POLITICAL ECONOMY PERSPECTIVE

The environment of the educational system is becoming more uncertain. The American economy is in a period of transition: employment in basic industries is in decline relative to employment in the service sector, and the character of the national economy is increasingly determined by an international division of labor. Birth rates are declining, while rates of inter-regional migration are high. School reform is once again a national preoccupation, and proposals for changes in basic and higher education have been put forward in virtually every state in response to perceived inadequacies in the performance of the schools. Proposals for federal tax reform threaten the traditional financial basis of the public schools, while discussion of tuition tax credits and educational vouchers challenges the privileged status of public schools within the educational system.

When faced with uncertainty, the Wicked Queen in "Snow White" ran to her mirror; omniscient, timely, and truthful, the mirror gave her the information she required. Educational policy makers have no such recourse. In uncertain times they are often obliged to act on the basis of information that is sketchy and unreliable, and of limited relevance to the decisions they must make. This need not be the case. The expanding activity of the federal government in the collection and dissemination of the data and the rapid development of the information technologies now make it possible to provide educational policy makers with access to reliable, timely data on many of the critical issues they face. The National Council on Education

Statistics should play a leading role in compiling these data and ensuring their availability to those who need them.

In this paper we discuss some of the ways in which NCES might reorient its activities in order to assist educational policy makers in making informed decisions. The paper is organized in three sections. The first section discusses the relationship between the educational system and its tax base. The second section of the paper proposes that policy relevance rather than convenience should determine the levels of aggregation of educational statistics. It also argues that decentralization in data collection will facilitate access and encourage relevance. The third is concerned with the maintenance of uniformly high standards of reliability and comparability in NCES data. It points out the dangers in confusing informational and regulatory data bases, and urges that the two be kept entirely separate.

Tracking the Investment Cycle

An increasingly complex economic and technical environment is changing the structure of educational policy making. Public support of education is at least partly grounded in the belief that education contribute to economic development. Concern about the returns to past investments in public schooling underlie many current efforts to reform the schools. The development of the future tax base must be a priority for educational policy making over the next decade. Without access to an adequate source of funding, excellent educational programs will do the next generation of taxpayers little good. The current school reform effort must recognize that education is a means to an end, and not an end in itself.

Education can be viewed as a middle product in a public investment cycle. Taxpayers can be seen as investors in those goods and services that would not receive adequate provision in completely private markets.

They invest in education primarily through property, sales and income taxes. Taxpayers in a democracy elect those who set taxes, thus exercising some degree of choice in the development of educational policies. Local, state and federal governments are then charged with investing these resources in educational programs, which in turn, are reinvested resources in students. (Students also invest their own resources in education, primarily in the form of time.) Eventually students enter a labor market and invest their human capital and time in return for a wage. They then close the investment cycle by becoming the next generation of tax-paying investors. Each investment in the sequence occurs under conditions of uncertainty, and each consequently requires an appropriate level of return to compensate for its risk. The adequacy and type of return to the educational investment is primarily a function of the investors' standards and perceptions of the returns to alternative investments.

Except at the national level, tax bases are not pooled. Local property taxes invested in a community's children may not produce a return if those children enter the labor market in other communities. If there is a balance of in and out migration, local governments, states, and regions do not have to be overly concerned about tracking their investments. If local and state investments in human capital ultimately subsidize their economic competitors, however, then policy makers will eventually restructure their educational investment policies appropriately.

The federal government can provide a service both to the education community and to national economic development by initiating a series of regional data bases that accurately track educational investment cycles in both public and private sectors. While local, state and private sources can help to support the initiative, the federal government through NCES should

set standards for data collection, insure comparability and timeliness, and provide computer networking systems for decentralized access.

A high quality system of information could encourage cooperative efforts among policy makers and researchers at all levels. These efforts could result in a more flexible, more responsive, and finally more productive educational enterprise.

Education is one of the nation's most broadly-based investments in future tax base renewal. It is also a nationally contained investment. While regional economic competition may create some policy friction, from a national perspective the resources invested in citizens have only minimal leakage, because relatively little human capital migrates and subsidizes foreign economic competitors. National educational investments for development contrast with the public subsidization of private corporations for the same end. Corporations can, with relative ease, export their investments and indirectly subsidize international competitors. Educational investments present lower risks for public investors.

Unfortunately, relatively little is known about the investment linkages between education and national economic competitiveness. Even this limited knowledge is eroding in a transitional economy with a murky future. In the fifties and sixties, there was a widespread belief in the contribution of mass public education to economic development. The American model was exported to developing nations with great fervor, but with little solid information.

Challenges to this confidence in public education surfaced in the mid-seventies as the momentum of the American economy waned. These challenges have generated intense criticism of the public school system and a variety of proposals for school reform. The educational community will

continue to face criticisms of its investment decisions into the next decade. Lacking adequate information, policy makers are likely to make decisions in response to the pressures of the moment, rather than to seek out productive, long-term educational investments.

According to a recent Urban Institute study, the average current wage earner from the "baby boom" generation earns ten percent less in real terms than did the average wage earner in the prior generation. Yet the "baby boom" generation was the recipient of extraordinary public educational investments of the fifties and sixties. Is this merely a temporary labor oversupply problem that will clear in the next generation, or are these returns a portent of the economy of the future? No one has an adequate mirror.

If educational policy makers at any level cannot track their educational investment cycles, they may incorrectly identify the problems requiring attention and inadvertently generate policies which result in costly unintended consequences. Educational delivery systems which may have been both appropriate and successful under different economic and technological conditions may hinder economic development under new conditions. For example, an economy with assumed growth can bear greater nonproductive distributive burdens than one with uncertain future growth.

The less that is known about current delivery systems and their impact on development, the riskier educational policy making becomes in the face of economic transition. A high quality integrated data base can provide a basis for reducing that risk.

The investment cycle can be tracked in a variety of ways. Sets of individuals should be followed through their educational careers and through the labor market, building on the High School and Beyond study.

Tracer studies should track students through alternative educational programs into the labor market. These studies should include fuller and deeper linkages with the labor markets and migration patterns.

School site resource allocation patterns of investment can be tracked through comparable measures. NCES could carefully examine detailed expenditures across a representative sample of school sites. Comparable data could be collected on direct and indirect fixed and variable, program, and logistical support costs. Outcome measure from these sites could be used to examine the cost effectiveness of current practices. Detailed environmental data could also be integrated to the site data base.

Finally, measures of educational investments in economic development might be most appropriately tracked at a regional level, both to avoid problems of data collection at too broad a level of aggregation and to follow the flows of educational capital across regions. NCES should not engage in direct collection at this level but can play a very useful role by coordinating, and editing existing data from other sources. At regional levels these would include comparable information about tax bases and tax effort, voter responses to tax initiatives, labor market patterns and trends in employment by sector, detailed in and out migration patterns, demographic structures, economic indicators such as housing starts, and public expenditures by sector. Good mirrors are expensive, but invaluable to policy makers.

**Individuals, Sites, Regions**

A central issue in public data collection over the next decade will be the aggregation problems connected with public investment. There are major gaps between policy and research questions and available data. For example, how do local and regional investments in education affect the regional and national economies? What are the tax base returns from public

investments in individual students? How is the school reform movement working at the level of the school site? These questions cannot be answered with present NCES data.

The aggregation problem is exacerbated by an increasing slippage between economic markets and the scope of public policy makers. Economic boundaries are fluid, as capital flows in and out of cities, regions and nations. Political boundaries are somewhat more rigid, as political stability rests on defined territory. Where economic and political boundaries are coincident, public and private interests may coincide as well. As boundaries diverge, however, sectoral slippage increases. For example, local investment in public schools may pay off when graduates remain in the community to regenerate the local tax base. If, however, the community's public school graduates leave the community and allow the returns to public investment in their education to accrue to the community's competitors, then investments in public education may result in net losses for that community.

NCES can play a crucial role in the formulation of educational policies by providing high quality information to policy makers. Reliable, valid, timely information could both provide the education sector with a competitive edge and help to maintain standards of quality in public investment. These data should be collected at natural economic levels of aggregation: 1) individual achievement and economic performance over time, 2) school site productivity and 3) regional economic returns on educational investments.

NCES in cooperation with other federal data collecting agencies should establish a national tracer data base to follow individuals through the

public investment cycle. Individuals carry with them public investments in their human capital. These investments are not evenly distributed across students. Test scores measure outcomes for the relatively short term, but additional measures of intermediate and long term effects would make possible a more accurate tracking of the educational investment cycle. In addition to tests, intermediate term indicators should measure the return on the public investment in the labor market. Tracer studies should track students from different backgrounds through alternative educational programs (private/public, academic/vocational/general), into the market place. The Bureau of Labor Statistics and others could then assist in tracking their progress.

Long-term measures should go beyond income as economic indicators of a return on investment, because income does not close the investment cycle for public education. Education revenues are still drawn for the most part from property rather than income taxes, and property taxes are by definition tied to the economic health of regions. The financial basis of public education assumes stability in the investment cycle: local communities and states invest in public education so that graduates will provide returns as property owning citizens in the future. Disruptions in this cycle caused by net in or out migration disturb the community's expectations of a return on its investments in education and alter tax payers' willingness to support the schools.

Another neglected level of data collection is the school site. School sites are the most important levels of aggregation for assessing the impact of the school reform movement. They bear the burden of the regulation generated by legislative initiatives and community response. School

districts, intermediate units and states are less interesting and relevant levels of aggregation than school sites for the measurement of the impact of educational policies.

NCES should select a representative sample of school sites from which to collect a rich base of information about the relationship between school site investments and educational outcomes. Individual studies have been conducted in this area, but a national longitudinal effort comparing public and private school sites across regions would provide researchers and policy makers with integrated, reliable information with which to track the progress of school reform initiatives.

Site indicators should include regulation costs to track the time and resource response costs of centralized policy initiatives. Also while NCES has collected data from private schools, a much more comprehensive picture of site costs of alternative education investments is in order.

Policy makers must wrestle with serious questions about the returns on investment in public education. Would deregulation through increased competition raise or lower teacher wages in a free market? Would deregulation increase the sector's investment in low cost labor intense practices or would there be a shift toward lower cost physical technology? Before such pressing questions can be addressed more must be known about the actual costs of educating different types of students under alternative conditions.

At the regional level, NCES can provide a valuable service by supporting integrated data bases which more closely link public investments and economic returns. Regional data bases can more accurately track the interplay between private and public investment and return: therefore, the

effects of educational investments on tax bases generated by human capital circulation and savings can be measured more meaningfully.

While policy making will continue at local and state levels, regional data bases can provide decision makers with higher quality information than if data are collected at more artificial levels of economic aggregation.

The interaction between education investment and the economy is complex, and data aggregated at the national level mask the important effects of externalities generated by regional subsidization of local and other regional economies. Failure to recognize these effects may lead to inaccurate predictions about the expectations and behavior of taxpayers, and to a misunderstanding of the performance of regional economies. Over a longer term these effects could be substantial.

The federal government, by sponsoring integrated comparable regional data bases could encourage decentralized, coordinated decision making for economic development. Economic regions cut across state lines, and regional data bases would lower the costs of accurate, timely and accessible data for policy makers at local, state and federal levels by reducing the duplication of effort, increasing the data collection investment pool, and encouraging greater cooperation in regional development efforts. These data bases would not only track regional investment cycles but would also provide comparable data for tracking national trends.

Regional data bases also make technical sense. NCES can help to coordinate federal inter-agency efforts to link public investment to tax base return. The Census Bureau, the Bureau of Labor Statistics, the National Science Foundation (NSF), the Department of Commerce and many other

agencies collect information which is vital to the tracking of economic development. These departments should work more closely with their counterparts at state and local levels to insure accurate, comparable, timely data at regional levels.

Recent technological developments can provide momentum in these new directions. Supercomputers can process complex dynamic models that until recently were only theoretically possible. A high quality regional data base could support more sophisticated modeling of public investment cycles.

NSF has sponsored a series of Cray supercomputers for academic use. A cooperative effort between NCES and NSF could pilot a regional data base to track a public educational investment cycle. Initially it would be better to focus resources on a single high quality data base than to lower the quality of data collection by underfunding a more broad based effort. Under these conditions, investment in a pilot data base could lead to lower-cost implementation of a refined and expanded system at a later date. State, local and private investors could be encouraged to bid for the experimental information base.

Collection Criteria

In the past NCES has not been known for high quality indicators and data collection. There should be no compromise on standards of quality in a refocused program. The criteria for NCES data collection should include: 1) parsimony, 2) accuracy, 3) comparability, 4) timeliness and, 5) accessibility.

Parsimony is paramount. Overcollection of data at low-cost levels of aggregation is wasteful and of little use to policy makers. The nature of the data collected by NCES should be determined by long-range usefulness.

What are the important questions that policy makers and researchers will be asking over the next decade? What resources are required to support long term maintenance of high quality indicators? Less is more if fewer items of data are collected at more appropriate levels of aggregation, even if this means higher costs per item of data. If NCES is to serve as a role model for a refocused federal information system, then enough care should be invested in it to make it cost effective in the long term.

Accuracy is an acute quality control issue. It requires unambiguous standards of tolerance that are frequently monitored. Indicators must be defined in clearly measurable terms. Opinion poll information can be useful to policy making if the data standards are considered excellent by experts and the methods and standards employed in collection and interpretation are easily accessible. Access to raw data for reinterpretation should be considered.

Comparability counts. Crossectional financial data comparisons are currently impossible because financial data are collected for idiosyncratic regulatory purposes. Longitudinal data comparisons have not had formal, consistent long-term tracking commitments. For example, the quality of minority representation data has eroded over the last decade. Longitudinal data comparability should require firm, ten-year commitment levels. NCES should encourage states to collect at least minimal amounts of comparable crossectional and longitudinal data, especially within regions. The lack of such data obliges policy makers to make decisions without an adequate supply of information.

The lack of timeliness in educational data collection is shameful. Lag times in reporting are often measured in years instead of days or

months. This is a serious underinvestment in data collection activities. Policy makers require timely data for decision making and should be willing to pay for it.

Accessibility is an absolute requirement of a refocused federal information system. Networking systems can now be established to allow highly decentralized use of data. This requires the capacity to download files into other systems and the availability of highly sophisticated user-friendly software so that questions can be addressed with minimal inconvenience. In addition to a user-friendly data base management system, NCES should sponsor the development of expert systems to interface with central data bases so that policy makers can ask questions and receive timely answers in a useful format. Accessibility could additionally include easy interface with graphic systems, statistical packages, and "what-if" scenario packages.

Networking through NCES might also provide access through the system to data bases maintained by other agencies. Access to multiple data bases could be useful in tracking national and regional investment cycles.

High quality data collection can influence the process as well as the outcomes of policy making and research. NCES should invest in studies with NIE and other agencies to study the potential impact of this influence.

Quality can be produced if sufficient incentives are available. NCES may want to provide incentives for quality through the use of fees for services and user charges. NCES could contract with school sites and other agencies for data. Policy makers should be willing to invest in data collection that can provide them with support.

While data collected for NCES could serve to monitor regulatory costs, they should not be used for regulation for at least three reasons. First, monitoring requirements tend to result in highly specialized, complex and cumbersome data requirements. Second, regulation by definition introduces reporting biases, thus distorting accuracy and reducing the credibility of the data base. Threatened administrators could stall in reporting and processing data to reduce timeliness. Third, secrecy is often a major component of regulated systems. The NCES system should be known for its wide accessibility through multiple networking systems.

While omniscience is beyond the reach of any federal inormation system, timeless and truthfulness should be the objective of all NCES activities. NCES should strive to answer those questions that policy makers ask, not those that are easy or inexpensive to address, and every effort should be made to ensure that the answers are based on reliable, timely data. NCES should be seen by policy makers as the manager of a mirror for the educational system, and not a purveyor of poisoned apples.

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